

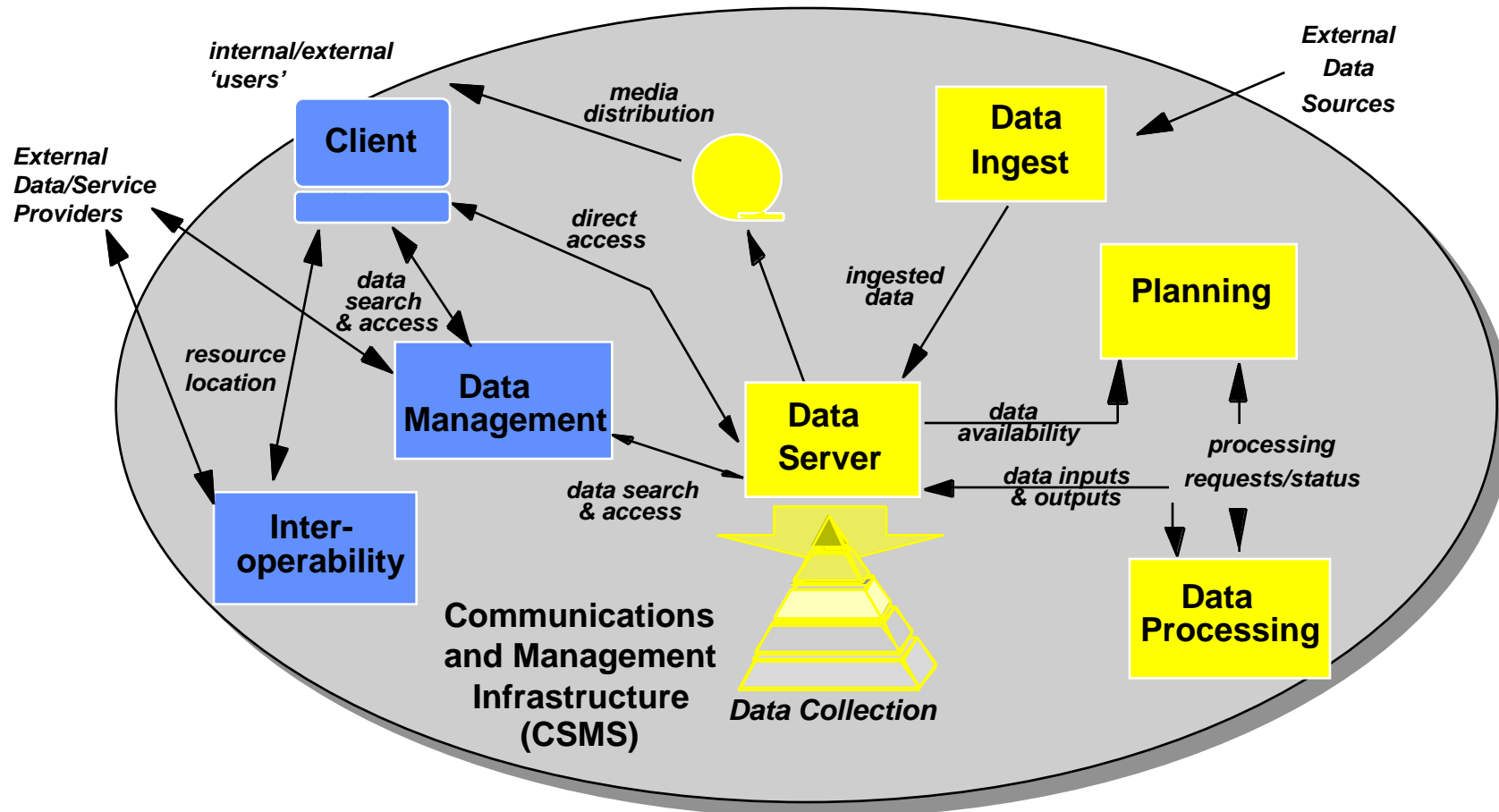
CORBA Alternatives Analysis and Prototype

Mike Moore

mike.moore@gsfc.nasa.gov

13 November 1995

ECS Architecture



CSMS Requirements

CSMS is the infrastructure that interconnects and manages ECS and its interfaces to external groups. To accomplish its mission, CSMS:

- **Provides network connectivity/interfaces**
 - **between users, DAACs, EOC, EDOS, SCFs, ADCs, EPDSs, IPs.**
 - **within DAACs and EOC.**
- **Provides interoperability between services of FOS, SDPS, external entities, and (CSMS's own) management functions in a manner which maximizes flexibility to relocate and evolve those services.**
- **Provides management tools for the efficient and effective operation of DAACs, EOC, ESN, and interfaces with other EOSDIS components.**

These three core requirements map cleanly into three CSMS subsystems.

CSMS Vision

<i>From:</i>	<i>To:</i>	<i>Reason:</i>
DCE-based interoperability	ORB-based interoperability	Facilitate addition of new ECS and GCDIS servers
Network/system management	Object management	Evolve to emerging industry standard
Hierarchical management	Federated management	Avoid single point of failure; facilitate GCDIS growth

CSMS Communications Technologies

Technology Drivers	DCE	DCE w/Ext.	OMG
Synch. Interprocessing	✓	✓	✓
Asynch. Messaging		✓	✓
Static Invocation	✓	✓	✓
Explicit Static Binding	✓	✓	✓
Implicit Static Binding	✓	✓	✓
Directory Service/Scalability	✓		✓
Naming Service/Scalability	F	F	F
Security Service	✓	✓	F
Object Technology	P	P	F
Time Synchronization	✓	✓	F
Multivendor Interoperability	✓	✓	F
O/S Transparency	✓	✓	F
Event Processing/Maturity	P	P	F
Concurrency	✓	✓	✓
Internationalized Security	F	F	F
Multiple Language Support	F	P	F
Legacy Server Integration		✓	F
Dynamic Invocation		P	✓
Dynamic Load Balancing		✓	F
Request Broker Service		✓	✓
Server Advertising/Scaling		P	F
Real Time Collaboration		P	F
Trading			F
Federation Transparency			F

✓ = Compliance, P = Partial Compliance, F = Future Compliance, ? = Incomplete information

Technology Issues

Technology Availability / Applicability

- CORBA availability
- DCE / CORBA acceptance

Competing Technologies

- OLE
- WWW
- Z39.50
- DBMS and transaction management
- Distributed file systems

Shifting requirements emphasis

Task Goals

Examine the extent to which alternative technologies address ECS infrastructure requirements:

- **Focus on data and service access**
- **Focus on technologies that support inter-system interaction**
- **Focus on technologies with 1997 viability**

Work Completed

- Summarized ECS data and service access requirements
- Performed high-level requirements mapping to several alternatives:
 - RDA
 - ODBC
 - SQL3
 - ODMG-93
 - Z39.50
 - HTTP
 - Java
 - Harvest
 - V0
- Demonstrated several key alternative capabilities
- Preparing white-paper summarizing findings

Future Work

Establish working relationships with external technology experts to:

- **Perform detailed analysis for selected technologies**
 - WWW
 - OLE
- **Prototype system capabilities based on analyses**
- **Develop project recommendations**